On the Semi-Commercial Scale Purification of Rice Oil by an Emulsive Washing Method

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processes by two kinds of apparatuses at the same pressure; one was common flask type apparatus and the other was E. H. Farmer's cylindrical molecular distillation type apparatus. We used liquid component of rice oil fatty acid (at about 10°C) as samples, which had the properties recorded in Table 1.

Table 1.

	A.V.	I.V.	Unsaturated component		
			%	A.V.	I.V.
rice oil fatty acid (A)	168	114	84	177	126
〃 (B)	184	119	83	201	127

The yied of distilled fatty acid by cylindrical type apparatus was about 5% larger than that by flask type apparatus.

When rice oil fatty acid was intentionally polymerized by heating with a catalyser, such as PbO, MgO or Al_2O_3 ect., and distillated, large portion of distillate was palmitic acid and oleic acid, and residue was almost linolic acid. The results are given in Table 2.

Table 2.

Sample	Polymerization	Distillate		Unsaturated fatty acid in distillate	
		Yield (%)	I.V.	%	I.V.
(A)	none	72	126	85	118
〃	Pb0,2%; 270-280°C, 4h	63	113	83	110
〃	Pb0,2%; 300-310°C, 5h	46	83	55	92
(B)	none	84	114	89	113
〃	Pb0,2%; 300-310°C, 5h	43	80	58	90

In the polymerization-distillation process, I. V. of unsaturated fatty acid separated from distillate was nearly equal to that of oleic acid, 90.

24. On the Semi-Commercial Scale Purification of Rice Oil by an Emulsive Washing Method

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In the previous paper, it was reported that the difficulty in the purification of rice oil was removed by the application of an emulsive washing method. (This

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In this paper, some results obtained from the examination of some problems on the semi-commercial scale purification of rice oil, employing the method, above mentioned, are described. The main parts of the results are as follows.

1. If aqueous solution of sulphuric acid is used as one of the most effective washing agents against crude oil, the condition under which the decoloration effect and the yield of clear top oil are maximun, is that the concentration of the solution is about 10 % (wt.) and the rate of the solution added to the oil is about 18 % (vol.).

2. Concerning the mode of the emulsive washing, the agitation by air bubbles is more effective than that by a stirrer.

4. As one of the means in order to prevent the coloration of declored rice oil, caused by contacting the oil with iron material, the "passive" treatment of the iron surface is somewhat effective for oil whose acid value is lower than fifty.

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25. Studies on the Softening and Swelling Properties of Coal in Carbonization Process

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For the testing methods of the plastic state of coal, there are Shefield Laboratory Test, K. B. S.-method and Tadokoro's method etc.

Authors modified the K. B. S.-apparatus to obtain softening-swelling curve and gas evolution curve simultaneously. The used samples were of various ranks of coals (fuel ratio 0.5-5.0) in Japan.

By obtained softening-swelling curves, all samples were classified in three types, non-softening type, softening type and softening-swelling type. Lignite or low rank coal and anthracite belonged to non-softening type, and were not caking. Bituminous coal belonged to the second or third type, and the fuel ratio range of softening type coals was between 1 and 3, and that of softening-swelling type coals was between 0.5 and 2.5

The critical points of these curves, softening temperature, maximum swelling temperature and temperature of maximum gas evolution rate, etc., were closely referred to the fuel ratio of coal samples.

The effects of size of coal and load to coal charge were examined with typical samples of each type, but no distinct conclusion was obtained. About artificial coals (prepared from cellulose, lignin, protein and their mixture in the medium of H_2O or N/10 NaOH) were also examined, but it was difficult to compare artificial